LOUDOUN COUNTY, VA
TECHNICAL REVIEW

PROPOSED
NEW
138-foot MONOPINE
by
INVISIBLE TOWERS

Charles Town Pike Site
CMPT 2007-0014
SPEX 2007-0023

Submitted by:

ATLANTIC TECHNOLOGY CONSULTANTS, INC.
A Member of The Atlantic Group of Companies

ATC PROJECT #: 1025-12

November 2, 2007

EXECUTIVE SUMMARY:

Invisible Towers, LLC, of Waterford, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct one (1) monopine on property owned by John P. and Wanda Collins located on the north side of Charles Town Pike (Route 9) between Daymont Lane and Old Wheatland Road (Route 698) at 38696 Charles Town Pike, Waterford, VA.

Invisible Towers is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. The Applicant has stated that "The proposed structure has been designed to accommodate each of the large voice and data service providers (e.g: AT&T, Verizon, Sprint/Nextel, T-Mobile) plus two Loudoun based internet service providers (i.e.; RoadStar, Loudoun Wireless), although Invisible has NOT submitted a Letter of Interest/Intent from any of these providers. However, Invisible has submitted AT&T coverage maps with and without the proposed site. AT&T is a FCC licensed telecommunications provider authorized and mandated to provide wireless communications services to the Loudoun County area. The Applicant is proposing the construction of a new 138-foot monopine to support service delivery in an area of verifiable lack of coverage near the intersection of Charles Town Pike (Rt. 9) and Berlin Turnpike (Rt. 287) in the Wheatland area.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant's recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that this application does not conform to any generally accepted safety standards with regards to setbacks **and is the recommendation of this Consultant that the proposed tower is DENIED (See Section 3.0 "Recommendations" of this document).**

George N. Condyles IV

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George N. Condyles, IV
President and COO
Atlantic Technology Consultants, Inc.

1.0 TECHNICAL:

1.1 Siting

The proposed tower site is a fenced compound on approximately 0.1859 acres of an 6.03 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 27-29 (MCPI # 414-49-5558). The proposed site, located on the north side of Charlestown Pike (Route 9) and the east side of Berlin Turnpike (Route 287), can be accessed off of Charles Town Pike and is physically located at coordinates N 39° 11' 1.6" and W 77° 39' 56.3" at a ground elevation of 515'.

The Applicant is proposing to construct one (1) 138-foot monopine, which can accommodate up to five (5) co-locators. The site compound includes a 1850 square foot storage building designed to look like a barn and could accommodate approximately 6 shelters or cabinets and could be accessed via a proposed 10' wide gravel access driveway.

Setback:

The tower complies with the County's current setback requirement that "…towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)] In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 138' monopine setback from the nearest property line approximately 149.4', which is 108% of the height of the tower. This is less than the recommended 110% that the consultant feels is a safety requirement.

The nearest occupied dwelling (Applicant's House) to the monopine is approximately 195.5' which is less than a recommended 750' from any occupied residence. Both the adjoining Residences are approximately 300' from the tower.

This close proximity to residential homes should not be tolerated.

The proposed tower site is basically located in the residence's backyard.

ATC has great concerns with the proposed location of this tower site due to its proximity to the residence house and neighbor's houses and the backyard arrangement. Because of the inherent danger of this, ATC recommends denial and a complete review of permitted setbacks for towers in relationship to residential homes. (See Section 1.5 "General Safety" of this report)

Geotechnical:

Not specified in the package provided to ATC

Landscape Buffer:

The County policies state that monopole sites should be sited within areas of existing mature vegetation so that the maximum amount of the structure and associated buildings are screened (Telecommunications Plan, Policy 1a, P. 7). In addition, visual impacts should be mitigated on the proposed property location and not rely on adjacent property vegetation and screening. Camouflaging is encouraged whenever feasible.

The existing on-site vegetation will provide limited screening. There are 70-foot trees sparsely scattered on the property.

Co-Location:

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate that would meet the carrier's coverage objectives.

However, there is an existing 145-foot tower located at 36655 Stony Point Road, Purcellville. The 145-foot guyed lattice tower is physically located approximately 1 ½ miles from the proposed Invisible Towers site at N 39° 11' 15.6" and W 77° 44' 6.4" at an elevation of 1090'. This tower has approximately two (2) slots available and would make a good hand-off site for the proposed Invisible Towers site or Wheatland site.

Invisible Towers has designed the monopine to accommodate up to five (5) co-locations.

1.2 Structural

The 138-foot monopine tower design shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Structural drawings of the monopine signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the towers' ability to structurally accommodate the antennae and associated appurtenances of five (5) co-locations, while complying with all applicable

construction and loading standards, guidelines, and codes has NOT been submitted with the Application.

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure. Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

A RF Analysis Report has NOT been submitted with the Application. In consideration of the close proximity of the tower to the property owner's residence and backyard, a certified RF Analysis Report is recommended.

RF site exposure warning signage placement shall be appropriately planned for this site.

1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

A grounding plan was NOT submitted with this Application.

1.5 General Safety

The site compound will be surrounded by suitable 8' high wooden fence to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

It is the opinion of this Consultant that the proposed tower site is a poor location due to its proximity to the property owner's house and backyard. If ice accumulates on the tower, it could be

a hazard to anyone nearby on the ground especially upon melting of the ice and it falling on unsuspecting people. The Fall Zone and the Collapse Zone for this site promotes an unsafe environment.

There should be a 750' setback from any residential homes on or off the site. In addition, a property line setback should be established to 110% of the height of the structure.

1.6 Interference

An interference study, taking into account all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design, and therefore it is assumed that such a study has not been performed.

While it remains technically prudent and advisable to complete this study for any new tower construction, practically speaking this consultant sees no evidence of interference by or with this site after a general evaluation of the surrounding transmitter sites.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

2.0 PROCEDUREAL

2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

"Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided."

2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication

Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A NEPA Phase I Report has NOT been submitted with the Application.

However, a letter dated April 4, 2007 from the Department of Conservation and Recreation was submitted with the Application that indicates no impact. This is only a response from one consulting agency. There are additional agencies that require consulting as noted below.

A NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
    - Figures, Drawings, Maps
    - Tribal Correspondence
    - Land Resources Map and FEMA Floodplain Map
    - SHPO Correspondence (See next Section 2.4 "Historic Impacts)
    - Department of Game and Inland Fisheries Response
    - Department of Conservation and Recreation Response

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President's Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is

required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

A Phase IA Archeological Assessment dated March 23, 2007 and prepared by The Ottery Group was submitted with the Application. The recommendation stated the following:

"The cultural materials recovered from three of the six STPs excavated at the proposed site location constitute an archeological site. The appropriate archeological site forms have been completed; upon review, DHR issued site number 44LD1466 for the project area. Because an archeological site was identified during this investigation, the project area is considered to have a high probability for the presence of prehistoric archeological resources. The Subject Site's promontory position, its close proximity to water sources, and the recovery of cultural material indicate prehistoric lithic procurement and reduction within the boundaries of the project area. Accordingly, additional archeological investigation is recommended prior to the construction of the Waterford telecommunications facility.

Recommended strategies include either a Phase I/II level investigation of 44LD1466 location or a broader Phase I level survey of the adjacent areas to identify non-site areas for the construction of the telecommunications facility."

A response from the Virginia Department of Historic Resources (VDHR) was not submitted with the Application.

2.5 Supporting Documentation

The Applicant did include documentation supporting the construction of the proposed site in the form of propagation mapping. RF coverage maps from AT&T showing their wireless coverage with and without the proposed Invisible Tower site was submitted.

An independent RF analysis has been performed by this consultant, with coverage maps appended to this report, verifying that the applicant will be able to meet their stated coverage objectives to provide the wireless coverage necessary to alleviate the lack of coverage encountered in this area.

Supporting documentation in the form of photo-simulation was submitted with the Application. This Consultant believes the photo-sims are an accurate representation of the monopine from various locations surrounding the proposed site with the exception of the close proximity of the tower to the property owner's house and back yard.

2.6 CWS #106 - Wheatland

Another site being considered for approval in this same area are two (2) 100-foot monopoles being proposed by Community Wireless Structures (CWS) to be constructed on a 4,800 square foot lease area. The proposed site would be located approximately on the south side of Charles Town Pike (Route 9) and the east side of Berlin Turnpike (Route 287) at 38295 Charles Town Pike, Waterford, VA.

The proposed CWS #106 Wheatland site is only ½ mile from the proposed Invisible Towers site. The CWS Wheatland Site is superior to the Invisible Tower application.

3.0 RECOMMENDATIONS

This application represents poor planning. D**ue to the proximity of the tower site to the property owner's residence and adjacent residences, and the concern for safety as well as, the results of the Archeological Assessment, this Consultant recommends the proposed tower is DENIED.**

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

George N. Condyles IV

George N. Condyles, IV
President & COO

Approximate location in backyard of residence @ 195' from House

Residence of Property Owner

Mature Trees of hardwood variety of approximately 70’ AGL.

Agricultural location in nearby area that has wooded area not in conflict with residential use.

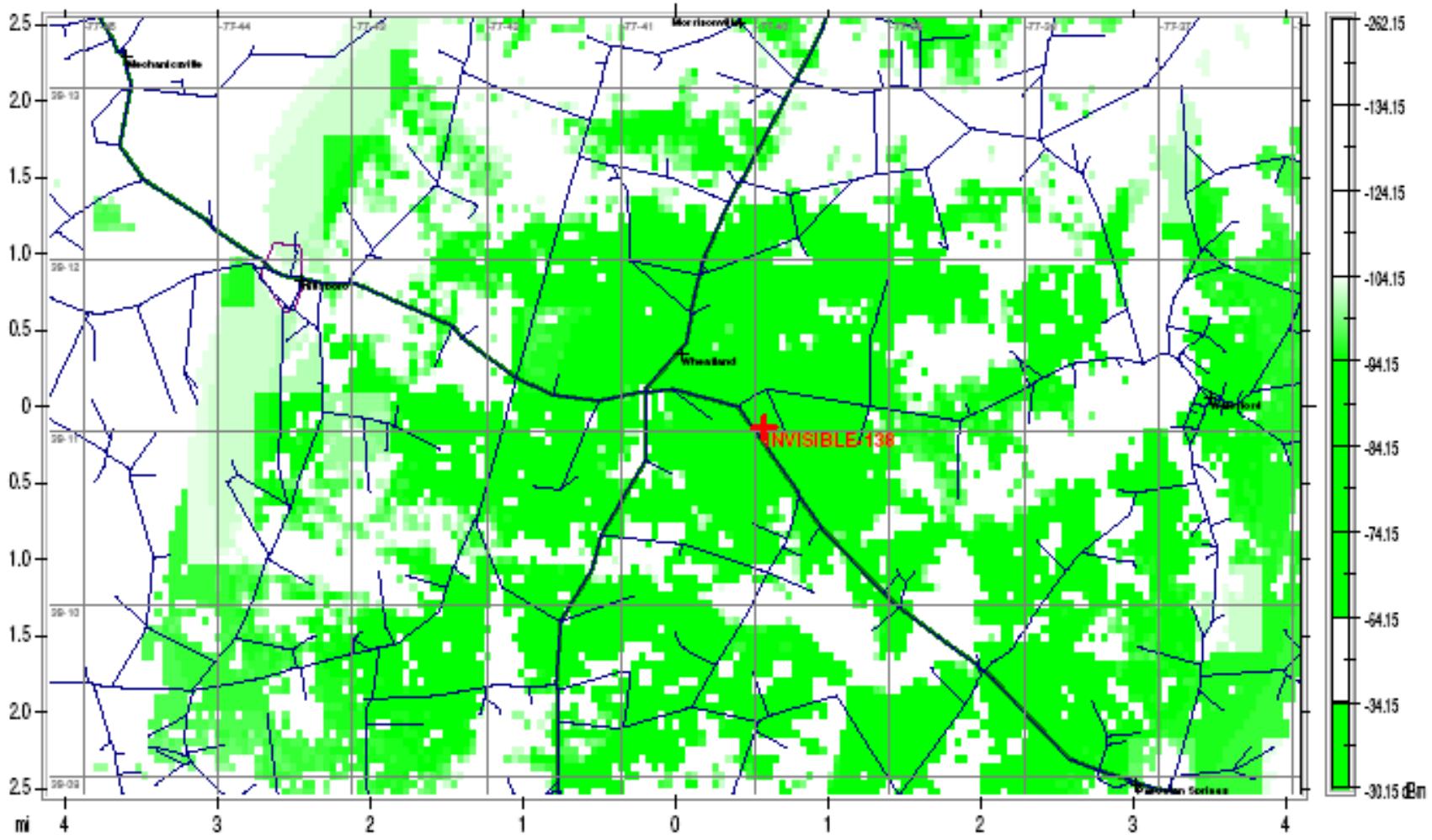
West View of Proposed Tower

Notice residential structure of adjacent property owner.

Mono-Pine Tree

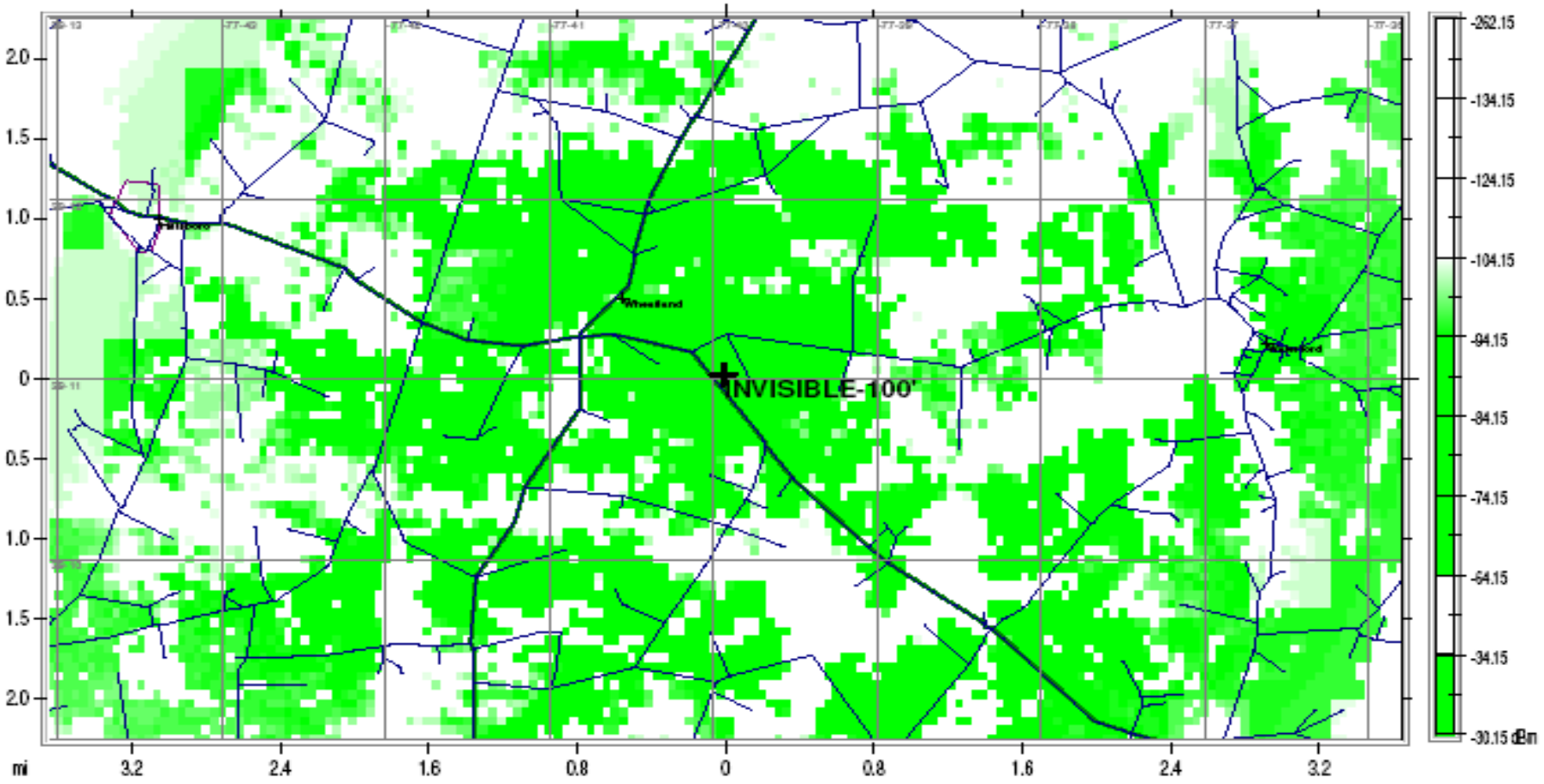
As proposed

WHEATLAND, LOUDOUN COUNTY, VIRGINIA

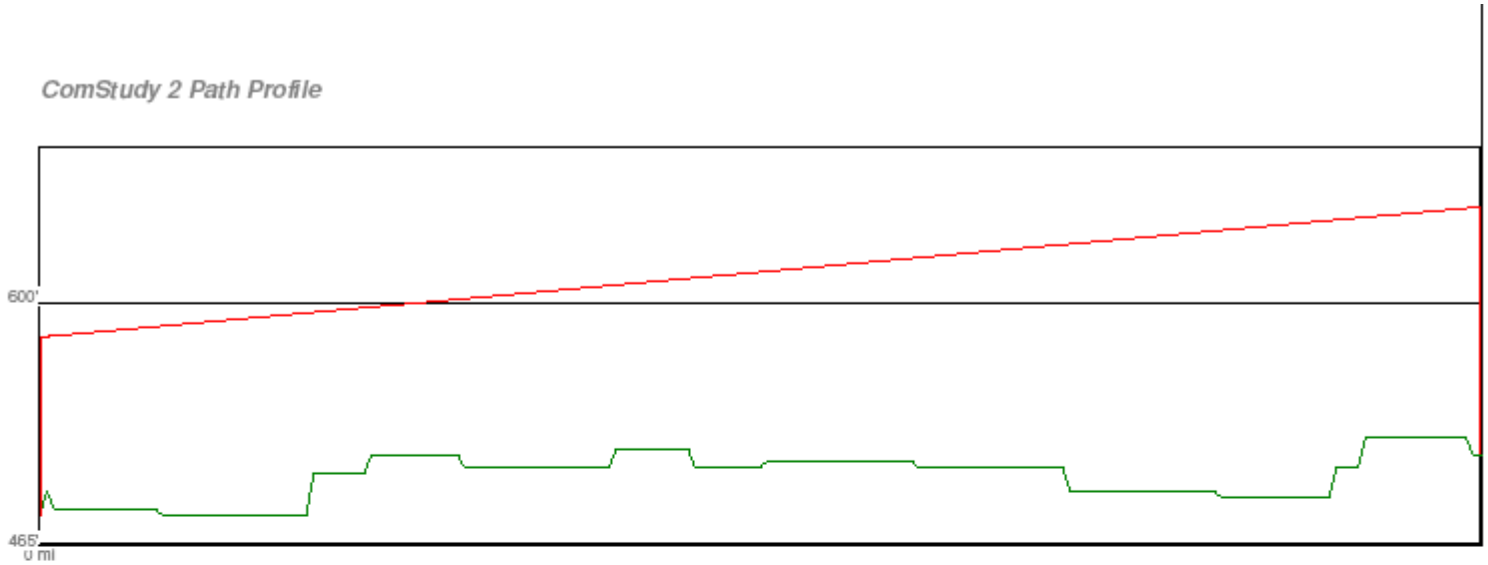


INVISIBLE TOWERS- 135

WHEATLAND, LOUDOUN COUNTY, VIRGINIA



INVISIBLE TOWER-100'AGL



CWS-WHEATLAND

Lat:	39-11-15.0 N
Lon:	77-39-27.6 W
AMSL:	483 ft
Tower AGL:	98 ft

INVISIBLE TOWERS

Lat:	39-11-01.6 N
Lon:	77-39-56.3 W
AMSL:	515 ft
Tower AGL:	138 ft

Profile Info

Distance:	0.50 mi
Bearing:	239.73 deg
# of points	200
K value:	1.333
Frequency:	150.0000
Clearance:	0.6

Losses

Base Loss:	74.1 dB
Fade Margin	N/A
Diffraction:	0.0 dB
Fresnel:	0.0 dB

Antenna Structure Registration

TOWAIR Determination Results

HELP

New Search Printable Page

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates	
Latitude	39-11-01.6 north
Longitude	077-39-56.3 west
Measurements (Meters)	
Overall Structure Height (AGL)	42.1
Support Structure Height (AGL)	42.1
Site Elevation (AMSL)	157

Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification
Notify Tribes and Historic Preservation Officers of your plans to build a tower.
Note: Notification does NOT replace Section 106 Consultation.